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## DEPARTMENTS.

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### SOLUTIONS OF PROBLEMS.

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#### ARITHMETIC.

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I saw problem 117 in a copy of *Ostrander's Arithmetic* in the winter of 1849-50, when I was nearly eleven years old, and solved it, at that time, for my teacher, Mr. John A. Shearer. Said Arithmetic was probably first published many years before that time. I herewith reproduce with the data of Problem 117 my *arithmetic* solution :

Consider an arc  $ab=20$  inches  $=\frac{1}{9}$  of a rod,  $c$  being the center of the circular farm. Then as sector  $acb$  = an acre = 160 rods, we have,  $r=160 \div \frac{5}{9}=32 \times 99=320 \times 9.9=9.9$  miles.

Since the ratio of the areas of a circle and circumscribed square is equal to the ratio of their perimeters, the diameter of the required square is equal to that of the circle, or  $9.9 \times 2=19.8$  miles.

The areas of the tracts are easily found, and agree with the results already given ; except, that in the first solution, 3068 is given in place of 3168, which leads to an area too small.

If we lay off  $ab=20$  inches  $=\frac{1}{9}$  of a rod on one side of the square (side  $=2x$ ),  $c$  being the center, we have as for the circle,  $x=160 \div \frac{5}{9}=9.9$  miles, or  $2x=19.8$  miles. But I found the side of the square, as first shown above, in my long-ago solution.

It may be worth remarking that the version of Mr. Baker differs slightly from that of Ostrander, as I remember it.

P. H. PHILBRICK.

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#### THE BEGINNING OF THE 20TH CENTURY.

The question as to when the 20th century begins has received so much attention in the last three or four years, and especially within the last six months—articles having appeared in a number of the leading magazines—that a brief notice of it in the MONTHLY may not be out of place.

It is strange, indeed, that so simple a question as to the time when the 20th century begins should occasion any controversy ; and yet there has been a wide and somewhat general misunderstanding about it. A few years ago, a circular was sent out by one of our leading book publishing companies, in which circular it was stated that the 20th century would begin December 31, 1901. Of course, this may have been a typographical error. But the general belief is that the 20th century will begin at 12 A. M., January 1, 1900. Such, however, is not the case, since up to that time, only 99 years of the present century will have passed. The 19th century will end at 12 o'clock P. M., December 31st, 1900, and the 20th century will begin at 12 o'clock A. M., January 1, 1901.

The misunderstanding of the matter has probably arisen from neglecting